

Claims

- [c1] 1. A packaging process, comprising the steps of:
providing an insulation layer, wherein the insulation layer has an upper surface and a corresponding lower surface;
forming a plurality of openings passing through the insulation layer;
attaching a tape onto the lower surface of the insulation layer;
forming a conductive body inside the openings;
mounting a chip over the upper surface of the insulation layer and the chip electrically connected with the conductive body; and
removing the tape.
- [c2] 2. The packaging process of claim 1, wherein forming the conductive body inside the openings comprises electroless plating.
- [c3] 3. The packaging process of claim 1, wherein the conductive body has a die pad and a plurality of contacts, and the chip has an active surface, a corresponding backside and a plurality of chip contacts on the active surface.

- [c4] 4. The packaging process of claim 3, wherein mounting the chip over the upper surface of the insulation layer comprises attaching the backside of the chip onto the die pad, electrically connecting the chip contacts with the contacts of the conductive body via a plurality of conductive wires, and forming a packaging material to encapsulate the chip and the conductive wires.
- [c5] 5. The packaging process of claim 1, wherein mounting the chip over the upper surface of the insulation layer comprises mounting the chip over the upper surface of the insulation layer via a plurality of bumps, the bumps electrically connecting the conductive body with the chip.
- [c6] 6. The packaging process of claim 5, wherein after mounting the chip over the insulation layer through the bumps, an insulation material is filled into the space between the chip and the insulation layer and the bumps are enclosed by the insulation material.
- [c7] 7. The packaging process of claim 1, wherein before mounting the chip over the upper surface of the insulation layer, a multi-layer substrate is formed by further conducting the steps comprising:
forming an additional insulation layer over the insulation layer;

forming a plurality of openings passing through the additional insulation layer; and
forming an additional conductive body inside the openings of the additional insulation layer.

[c8] 8. The packaging process of claim 1, wherein before mounting the chip over the upper surface of the insulation layer, a multi-layer substrate is formed by repeating the steps comprising:

forming an additional insulation layer over the insulation layer;

forming a plurality of openings passing through the additional insulation layer; and

forming an additional conductive body inside the openings of the additional insulation layer.

[c9] 9. The packaging process of claim 1, wherein material constituting the conductive body includes copper.

[c10] 10. The packaging process of claim 1, wherein material constituting the conductive body includes gold.

[c11] 11. The packaging process of claim 1, wherein the conductive body is a composite structure comprising multiple metallic layers.

[c12] 12. The packaging process of claim 1, wherein the conductive body is a composite structure comprising a gold

layer, a palladium layer, a nickel layer and a palladium layer.

[c13] 13. The packaging process of claim 1, wherein material constituting the insulation layer is selected from a group consisting of glass epoxy resin, Bismaleimide-Triazine, polyimide and epoxy resin.

[c14] 14. A package structure, comprising:
a substrate having an insulation layer and a conductive body, wherein the insulation layer has an opening that passes through the insulation layer and the conductive body is filled into the opening; and
a chip mounted onto the substrate and electrically connected with the substrate.

[c15] 15. The package structure of claim 14, further comprising a plurality of conductive wires and a packaging material, the conductive body having a die pad and a plurality of contacts, the chip having an active surface, a corresponding backside and a plurality of chip contacts on the active surface, wherein the backside of the chip is attached onto the die pad, the conductive wires electrically connect the chip contacts with the contacts of the conductive body, and the packaging material encloses the chip and the conductive wires.

- [c16] 16. The package structure of claim 14, further comprising a plurality of bumps physically and electrically connecting the chip with the conductive body.
- [c17] 17. The package structure of claim 16, wherein the package structure further has an insulation material positioned between the chip and the insulation layer and enclosing the bumps.
- [c18] 18. The package structure of claim 14, wherein material constituting the conductive body includes copper.
- [c19] 19. The package structure of claim 14, wherein material constituting the conductive body includes gold.
- [c20] 20. The package structure of claim 14, wherein the conductive body is a composite structure comprising multiple metallic layers.
- [c21] 21. The package structure of claim 14, wherein the conductive body is a composite structure comprising a gold layer, a palladium layer, a nickel layer and a palladium layer.
- [c22] 22. The package structure of claim 14, wherein material constituting the insulation layer is selected from a group consisting of glass epoxy resin, Bismaleimide-Triazine, polyimide and epoxy resin.

[c23] 23. A process for manufacturing a substrate, comprising the steps of:
providing an insulation layer, wherein the insulation layer has an upper surface and a corresponding lower surface;
forming a plurality of openings passing through the insulation layer;
attaching a tape onto the lower surface of the insulation layer;
forming a conductive body inside the openings; and
removing the tape.

[c24] 24. The process of claim 23, wherein forming the conductive body inside the openings comprises electroless plating.

[c25] 25. The process of claim 23, wherein before removing the tape, a multi-layer substrate is formed by further conducting the steps comprising:
forming an additional insulation layer over the insulation layer;
forming a plurality of openings passing through the additional insulation layer; and
forming an additional conductive body inside the openings of the additional insulation layer.

- [c26] 26. The process of claim 23, wherein before removing the tape, a multi-layer substrate is formed by repeating the steps comprising:
forming an additional insulation layer over the insulation layer;
forming a plurality of openings passing through the additional insulation layer; and
forming an additional conductive body inside the openings of the additional insulation layer.
- [c27] 27. The process of claim 23, wherein material constituting the conductive body includes copper.
- [c28] 28. The process of claim 23, wherein material constituting the conductive body includes gold.
- [c29] 29. The process of claim 23, wherein the conductive body is a composite structure comprising multiple metallic layers.
- [c30] 30. The process of claim 23, wherein the conductive body is a composite structure comprising a gold layer, a palladium layer, a nickel layer and a palladium layer.
- [c31] 31. The process of claim 23, wherein material constituting the insulation layer is selected from a group consisting of glass epoxy resin, Bismaleimide-Triazine, polyimide and epoxy resin.

